DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-003034
Date Inspected: 24-Jun-2008

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 630
OSM Departure Time: 1530
Location: Shanghai, China

CWI Name:	Lvliqing and Wu Ming Cai			**CWI Present:**	☑ Yes	☐ No	
Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Approved WPS:**	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: OBG and SAS Tower Fabrication

Summary of Items Observed:

On this date, Caltrans Office of Structural Material (OSM) Quality Assurance (QA) Inspector Joselito Lizardo was present as requested to perform observations on the fabrication of Orthotropic Box Girder (OBG) and SAS Tower at Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China.

The QA Inspector has randomly observed the following activities on sub-assembly Bays mentioned below;

Bay 2: 114M Tower Mock-ups, Plate Cutting, Rolling
This QA Inspector observed machining/beveling of 8 -60mm thick x 305mm wide x 1015mm long plates marked P238, P122, P529, P24 and P407, which appear to be stiffener were seen in progress. Drilling of 16-24mm diameter bolt holes on 300mm X 300mm hollow steel diagonal brace still continues. There was no Caltrans job at the cutting table; rolling and tower mock up 114M were noted idle.

Bay 3: OBG side/bottom/edge panel
The QA Inspector randomly observed ZPMC welder operator Lin Zhi Hong ID #062447 utilizing the Flux Cored arc Welding (FCAW) Process in the 2F (Horizontal Fillet) Position with gantry mounted welding apparatus and a 1.4mm diameter electrode, filler metal brand K-71TSR semi automatic to weld fillet between 3-open rib stiffener to deck panel DP047-001-013/004 using ZPMC Weld Procedure Specification (WPS) WPS-B-T-4132. QA Inspector Lizardo randomly observed ZPMC CWI Wu Ming Cai monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 298 amps, 30.6 volts and 400mm per min travel speed. The weld parameters appeared to comply with contract requirements.

Tack welding/fit-up of 6-WT(W21x57) rib stiffener to bottom panel BP196-001-011~018 using 4.0mm diameter TL-508 electrode and 3-open rib stiffener to deck panel DP011-001-002/003 using THJ506Fe electrode with preheating prior tack welding this QA noted. All other related welding activities observed include clamping to gantry #2 table two edge panels EP042-001-001~004 and EP056-001-001~004, grinding/cleaning of tack welds on 6-WT(W21x57) rib stiffener of side panel SP173-001-007~018 and cutting of W21x57 to make WT rib stiffener for various bottom panel BP192.

Bay 4: Tower Diaphragm

This QA Inspector randomly observed two ZPMC welder Li Shi Qiang welder 053609 and Li Meng Quan ID #054460 utilizing the FCAW Process in the 3G (Vertical Groove) Position with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic with ZPMC WPS WPS-B-T-2233-B-U3-F, to weld fill pass on groove (bent heavy plate) splice butt joint on Tower Diaphragm Flange Sub-Assembly NSD1-SA276 weld joints 6B and 3B respectively. The QA Inspector randomly observed ZPMC CWI Zhao Chen Sun monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 218 amps, 26.5 volts with a travel speed of 119 millimeters (mm) per minute for welder ID#053609 and 213 amps, 25.8 volts with a travel speed of 116 millimeters (mm) per minute for welder ID#054460. The weld parameters appeared to comply with contract requirements.

This QA observed diaphragm flange SSD1-SA335 having 9.0mm gap on two corners(curves) of the diaphragm plate was observed being fit/pushed into plate by ZPMC personnel using 3-hydraulic ram. Other diaphragm plate NSD1-SA335 that was hard to fit is no longer seen on site and tack/fit-up and pre-assembly of WSD1-SA234 was seen in progress.

Bay 7: OBG - Floor Beam Sub Assembly

This QA observed ZPMC MT personnel Wang Wei perform 10% Magnetic Particle Testing on fillet weld between stiffener and flange to web plate of floor beam FB001-005 and FB016-011. It was noted that rust and scale have been removed by ZPMC workers on weld areas prior MT testing. Electromagnetic Yoke was used with alternating current (AC) as power source. The detection media used was dry red ferromagnetic particles and applied with powder blower while the magnetizing force is on and magnetizing force is applied in perpendicular direction (180 degree apart). On this test, two transverse cracks were found on fillet weld of floor beam FB001-005 and five transverse cracks were found on fillet weld of floor beam FB016-011. Aside from transverse cracks that ZPMC/NDE found, this QA noted fillet weld cold lap on floor beam FB016-011 weld joints 015/016 and 017/018, 3 notches on each of the floor beam flanges that were not properly blended into 10:1 ratio and noted Hi/Lo between the stiffener plate and flange. On this flange/stiffener intersection, ZPMC has blended some of it and left some as it is. See photo below.

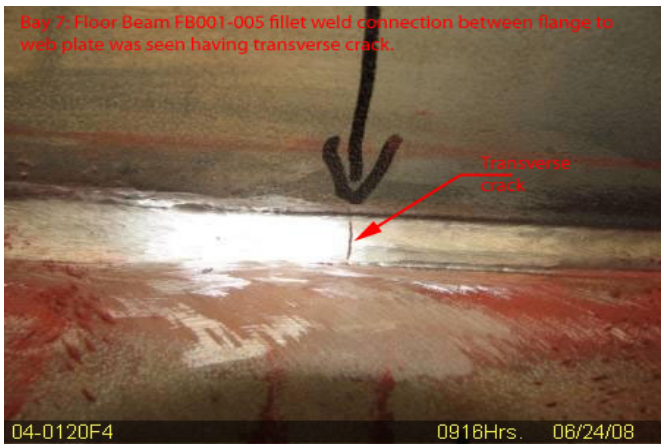
QA Inspector J. Lizardo randomly observed two ZPMC qualified welder Zhang Qingquan ID #044774 and Hong Shuili ID # 044815 groove welding cover pass on (flange to web plate) tee joint. Mr. Zhang and Mr. Hong were observed welding in the 2G (horizontal) position utilizing a flux corded arc welding (FCAW) process with a 1. 4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic at floor beam FB009-009-043 and FB011-002-043 respectively. QA Inspector Lizardo observed the ZPMC QC CWI Inspector Huang Wen Pang verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS).

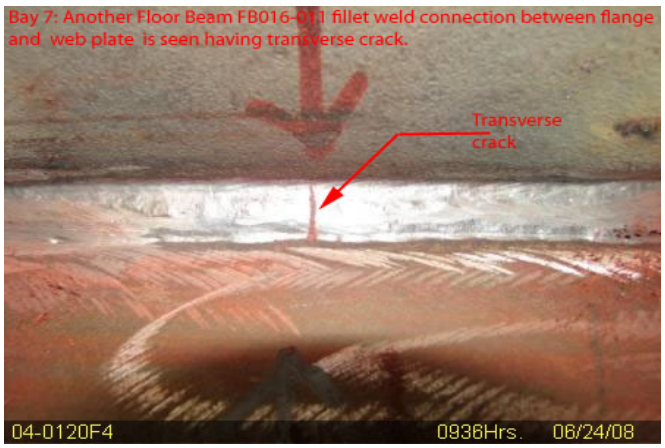
The QA Inspector randomly observed ZPMC welder Duani Xiu Xin ID Number 050502, utilizing the SAW Process in the 1G (Flat Groove) Position with ZPMC WPS WPS-B-T-2221-B-L2c-S-1, to weld the cover pass on plate butt splice of floor beam FB033-001-117. The QA Inspector randomly observed ZPMC CWI Hu Wei Qing, monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 526 amps, 30.1 volts. Weld parameters appeared to comply with contract requirements.

This QA observed alignment of inside tack welded connection plate (of 300mm x 300mm hollow steel diagonal brace FB006-022-004) to continuity gusset plate of floor beam FB003-040-022 to be greater than 1.4mm. This QA informed ABF QA Inspector David Larue concerning this alignment but said he will refer this to ZPMC why they did this.

Bay 8: Tower Diaphragm
This QA Inspector randomly observed two ZPMC welder ID Jiang Yong Sheng ID number 045240 and Xie Chunfu ID #045236 utilizing the FCAW Process in the 3G (Vertical Groove) Position with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic with ZPMC WPS WPS-B-T-2233-B-U3-F, to weld fill pass on groove (bent heavy plate) splice butt joint on Tower Diaphragm Flange Sub-Assembly ESD1-SA32 -9A and WSD1-SA309-10A respectively. The QA Inspector randomly observed ZPMC CWI Shazhi monitoring weld parameters.

All other related welding activities noted in this bay include tack welding/fit-up of flange to web plate corner PJP joint on longitudinal shear plate LD013-001-012, floor beam plate splice butt joint on FB008-007-026 and FB080-002-032 using TL-508 electrode and bevel cutting of bent heavy plates for various tower diaphragm flanges.





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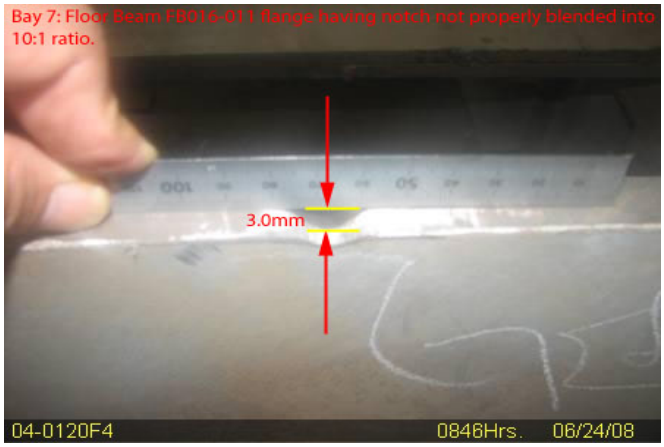

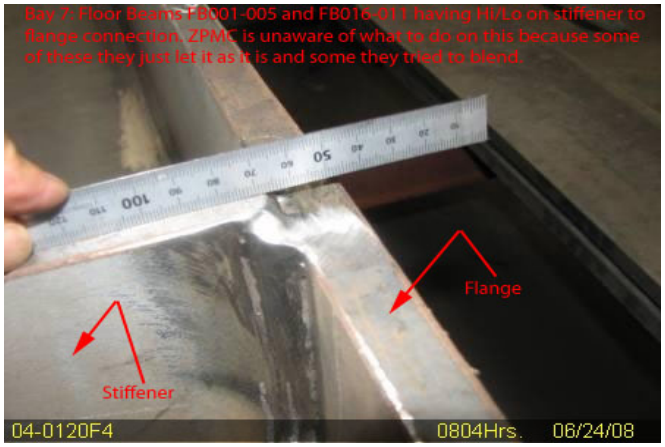

Summary of Conversations:

No significant conversation observed today.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By:	Lizardo,Joselito	Quality Assurance Inspector
Reviewed By:	Cuellar,Robert	QA Reviewer